BAREJ, B.

News on petroleum. Przegl geol 11 no.1:63-64 Ja '63.

ORLOWSKI, B.; BAREJ, B.

Economic information. Przegl geol 11 no.2:129-131 F '63.

IBAREJ, B.

Economic news. Przegl geol 11 no.4:209-210 Ap '63.

BAREJ, B.

Economic news. Przegl geol 11 no.11:502-504 N '63.

GUTOWSKI, Boleslaw; BAREJ, Wieslaw; TEMLER, Anna; NOWOSIELSKA, Irwina

Studies on the content of the rumen in cattle. II. Volatile fatty acids and nitrogen compounds in liquid contents of the rumen and free amino acids in the blood of calves fed green lucerne. Acta physiol.polon. 12 no.1:119-128 Ja-F '60.

1. Z Katedry Fizjologii Zwierzat S.G.G.W. w Warszawie. Kierownik: prof.dr B. Gutowski.

(STOMACH physiol.)
(FATTY ACIDS)
(NITROGEN)
(AMINO ACIDS blood)

KOZNIEWSKI,Stanislaw; BAREJ,Wieslaw

Effect of acetylcholine, adrenalin and serotonin on movements of the rumen in sheep. Acta physiol. polon.11 no.2:291-303 Mr-Ap '60.

1. Z Katedry Fizjologii Zwierzat S. G.G.W.w Warszawie, Kiernownik: prof. dr B. Gutowski.
(ACETYLCHOLINE pharmacol.)
(EPINEPHRINE pharmacol.)
(SEROTONIN pharmacol.)
(STOMACH)

BAREJ, W.

Amino acids in the liquid contents of the rumen in sheep fed green lucern. Acta physiol.polon. 11 no.5/6:647-648 '60.

1. Z Katedry Fizjologii Zwierzat S.G.G.W. w Warszawie. Kierownik: prof.dr B.Gutowski.
(AMINO ACIDS chem)
(STOMACH)

GUTOWSKI, B.; TEMLER, A.; BAREJ, W.; KULASEK, G.

Studies on the blood serum in heifers fed fodder with the addition of urea. Acta physiol.polon. 11 no.5/6:713 '60.

1. Z Katedry Fizjologii Zwierzat S.G.G.W. w Warszawie, Kierownik: prof.dr B.Gutowski.
(UREA)
(BLOOD chem)

GUTOWSKI, B.; KOZNIEWSKI, S.; TEMLER, A.; BAREJ, W.; KULASEK, G.

Studies on the cecal contents in horses. Acta physiol.polon. 11 no.5/6:714 '60.

1. Z Katedry Fizjologii Zwierzat S.G.G.W. w Warszawie, Kierownik: prof.dr B.Gutowski.
(CECUM)

BAREJ, Wieslaw

Transformations of nitrogen compounds in the rumen and duodenum of sheep fed with green alfalfa. Roczn nauk roln zootechn 84 no.3:525-531 '64.

1. Department of Animal Physiology of the Central College of Agriculture, Warsaw.

CZECHOSLOVAKIA / Virology. Human and Animal Viruses. E
EB Virus.

Abs Jour: Ref Zhur-Biol., No 2, 1959, 5324.

Author : Bohac, J.; Barek, B.; Dombok, R.; Hubic, R.; Laznicka, F.
Inst : Not given.
Title : Hyperimmune Sera of Cattle and Convalescents' Sera. Tests in Neutralizing Sera to Determine the Quality of Commercial Prophylactic Sera.

Orig Pub: Veterin. Med., 1958, 3, No 3, 179-186.

Abstract: No abstract.

Card 1/1

BAREKNE BARANYI, Ilona

Data on the histochemistry of Dugesia lugubris. Biol kozl 7 no.1/2:61-66 '59.

1. Budapesti Orvostudomanyi Egyetem Szovet- es Fejlodestani Intezete. Igazgato: Dr.Toro Imre.

BAREKNE BARÁNYI, Ilona

Histochemical investigations in triple-intestine turbellaria.
Biol kozl 9 no.2:163-165 '61.

1. Budapesti Orvostudomanyi Egyetem Szovet- es Fejlodestani Intezete. (Igazgato:Dr.Imre Toro egyetemi tanar).

CZECHOSLOVAKIA

HUBIK, R.; LAZNICKA, F.; BAREK, B.; Bioveta, National Enterprise (Narodni Podnik), Terezin.

"A Concentrated Saponin Vaccine Applied Against the Foot-and-Mouth Disease. I. Production and Study of the Effectiveness of a Monovalent Saponin Vaccine Against Foot and Mouth Disease."

Prague, Veterinarni Medicina, Vol11, No 5, May 66, pp 295 - 302

Abstract [Authors' English summary modified]: An inactivated monovalent saponin vaccine was prepared from foot and mouth virus in vitro; this vaccine establishes an immunity in adult cattle for 3 months. The immunity to infection lasts for 4-5 months, but the content of SN antibodies begins to decrease after 3 months. Revaccination should be carried out 2-3 months after the preceding vaccination. The vaccine is produced in vitro. 4 Figures, 17 Western references. (Manuscript received 30 Dec 65).

1/1

BAREKYAN, A.Sh., inzh.

Bed load discharge and stability of river beds. Trudy VNIIGIM 35:85-99 '60. (MIRA 14:9)
(Meshchera--Hydrology)

BAREKYAN, A.Sh., inzh.

Traffic capacity of regulated river beds and valleys during floods. Torf.prom. 37 no.3:10-13 '60. (MIRA 13:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii.

(Rivers --Regulation)

BAREKYAN, A. SH., CAND TECH SCI, "DIVERGENCE OF CHANNEL-FORMING DRIFT AND STABILITY OF THE CHANNEL OF CONTROLLED INTAKE RIVERS." MOSCOW, 1961. (MOSCOW ORDER OF LENIN AGR ACAD IMENI K. A. TIMIRYAZEV). (KL-DV, 11-61, 217).

AGASIYEVAV. S.I.; BARLKYAN, A. Sh.

Change of mean velocities in the main channel and Chezy coefficient during flood flow. Meteor. i gidrol. no.9: 36-39 S '61. (MIRA 14:8)

(Floods)

BAREKYAN, A.Sh. (Moskva)

Discharge of channel-forming sediments and the elements of sand waves. Meteor.i gidrol. no.8:33-35 Jl [i.e.Ag.] '62. (MIRA 15:7)

(Sedimentation and deposition)

[illegible], A. Sh.

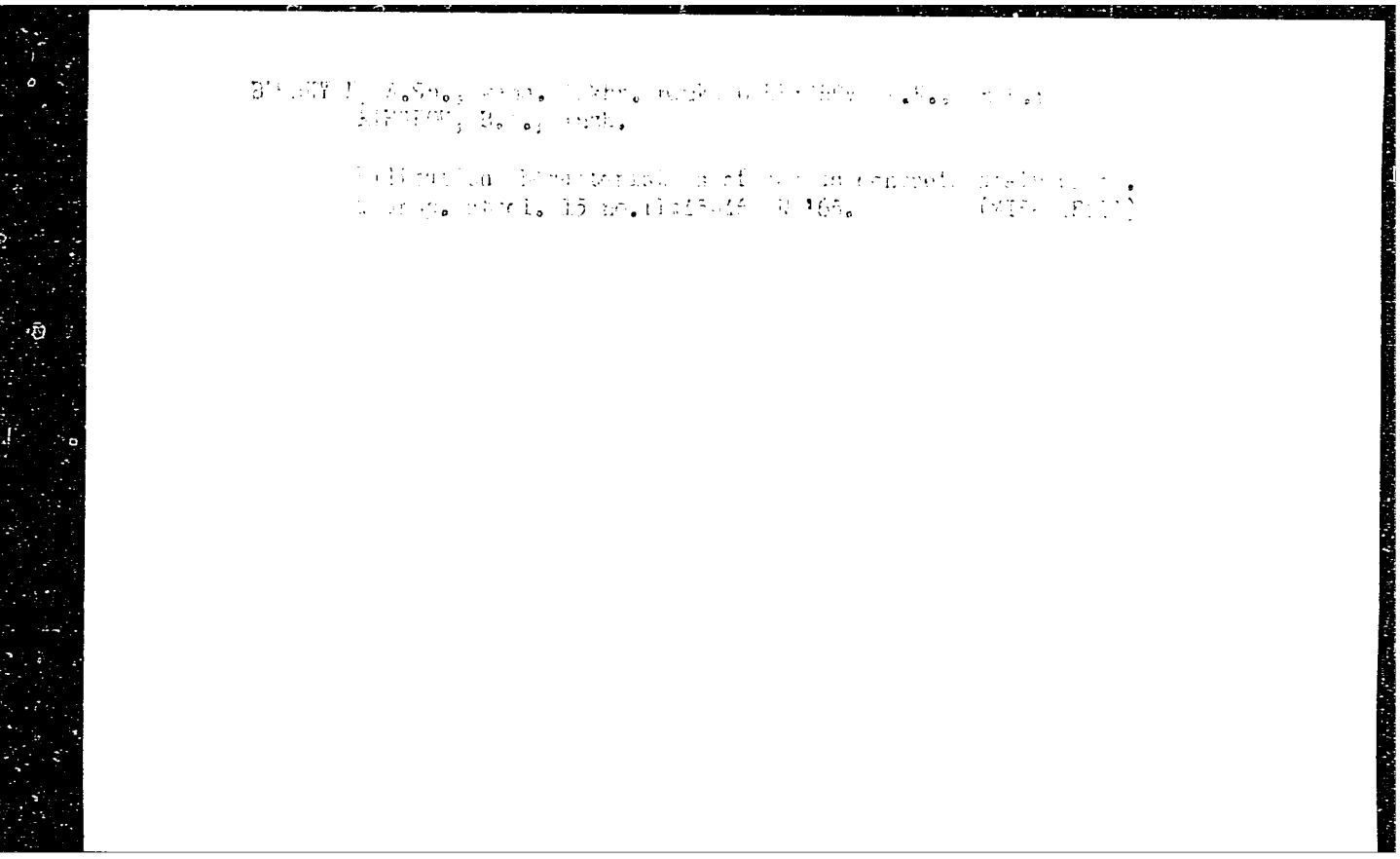
"The Discharge of Channel-Forming Flows and the Stability of the Channels of Regulated Water-Intake Rivers";

dissertation for the degree of Candidate of Technical Sciences (awarded by the Timiryazev Agricultural Academy, 1962)

(Izvestiya Timiryazevskoy Sel'skokhozyaystvennoy Akademii, Moscow, No. 2, 1963, pp 232-236)

YUFIN , A.P., red.; GUTOVSKIY, V.N., red ; BAREKYAN, A.Sh., red.; FRIDKIN, L.M., tekhn. red.

[Motion of alluvium and hydraulic transport] Dvizhenie nanosov i gidravlicheskii transport. Moskva, Gosenergoizdat, 1963. 197 p. (MIRA 16:7)
(Slit) (Hydraulic conveying)



BAREIADZE, P.L.

Hemorrhage into the labyrinth in acute leukemia. Vest. otorin 21 no.2: 92-94 Mr-Ap '59. (MIRA 12:4)

1. Iz kafedry bolezney ukha, gorla i nosa (nach. - zasluzhennyy deyatel'-nauki prof. K. L. Khilov) Voyenno-meditsinskoy akademii imeni S.M. Kirova.
(LEUKEMIA, MYELOCYTIC, compl.
otitic interna & hemorr. (Rus))
(OTITIS INTERNA, etiol. & pathogen.
myelocytic leukemia, with hemorrh. (Rus))

BARELIDZE, P.L. (Leningrad)

Functional role of the fenestra rotunda in the prognosis of fenestration of the labyrinth in otosclerosis [with summary in English]. Vest.-oto-rin. 21 no.1:66-70 Ja-F '59 (MIRA 12:1)

1. Iz kafedry bolezney ukha, gorla, i nosa (nach. zaslyzhenyy deyatel' nauki prof. K.L. Khilov) Voyenno-meditsinskoy akademii imeni S.M. Kirova.

(FENESTRATION,
fenestra rotunda, progn. (Rus))

BARELADZE, P.L.

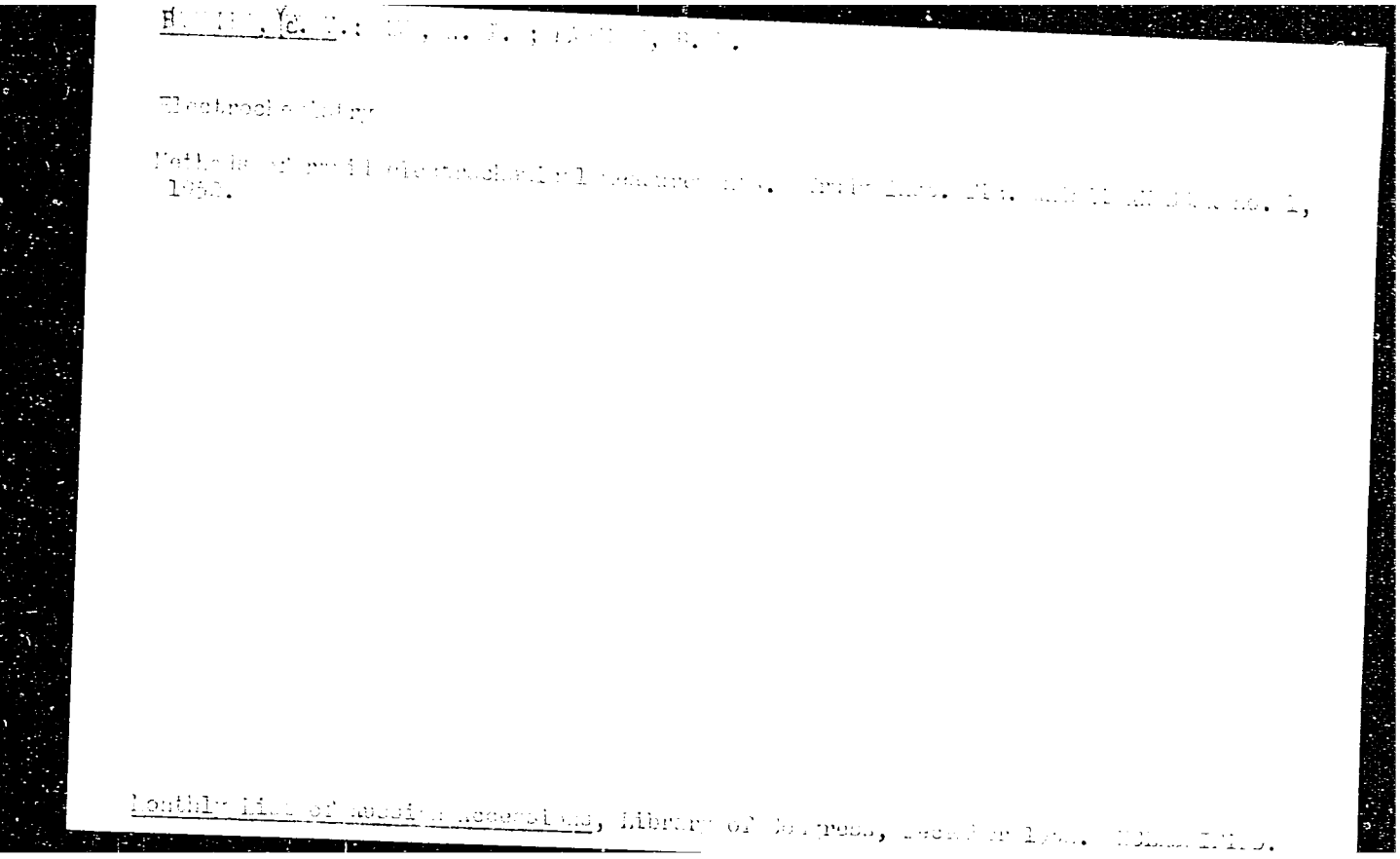
Method to stop bleeding with a fixed tampon following tonsillectomy. Voen.-med.zhur. no.12:60 '59. (MIRA 14:1)
(TONSILS--SURGERY) (HEMORRHAGE)

BARELKO, YE. V. Cand Chem Sci

Dissertation: "Electrochemical Processes on the Magnesium Electrode in Basic Solutions." 22/6/50

Inst of Physical Chemistry, Acad Sci USSR

SO Vecheryaya Moskva
Sum 71



Electrochemistry

1963.

Monthly list of Russian accessions, Library of Congress, [illegible]

Barelko, E. V.

USSR.

Passivation and activation of magnesium in alkali (potassium hydroxide) solutions. E. V. Barelko and B. N. Kabanov, *Doklady Akad. Nauk S.S.S.R.* 90, 1059–62 (1953).—Electrode potential, polarization, and H-evolution rates were investigated during dissolution of Mg (Mg 99.95, Mn 0.03, Fe 0.0075, and Al 0.004%) in 2*N* KOH. On a surface freshly abraded with a quartz edge, H was evolved at more pos. potential than on an aged surface. The formation of a passivating oxide layer was accelerated by anodic polarization. The oxide film slowed down but did not stop the corrosion current. At −1.0 v. vs. H electrode, the corrosion current was 10^{-3} amp./sq. cm. for a freshly abraded, film-free Mg surface, but 10^{-4}–10^{-5} for the aged surface. Anodic overvoltage was decreased greatly by high cathodic c.d., e.g. at 10 amp./sq. cm., the corrosion current increased to 0.7 amp./sq. cm. At high anodic polarization, the corrosion current was very low. The passive film, which caused the high anodic overvoltage at anodic polarization, had low ohmic resistance, below 2 ohms/sq. cm., so that at total anodic polarization of 3 v., the ohmic drop in the film was only 40 mv. Oscillographic study of the elec. behavior of Mg surface immediately after abrasion, without polarizing current, led to an estimate that the potential shift by 0.2 v. in the course of the first 0.1–0.2 sec. is caused by adsorption of less than one-atom-thick layer of O. From measurements of the electrode surface capacity by a phase-shift method, a thickness of 14 A. was calcd. for the film formed by anodic polarization. The loose porous oxide layer formed on Mg had no passivating effect *per se* and no significant ohmic resistance. Andrew Dravnieks

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(1)

BARELKO, V.E.K.

Sensitization and suppression of oxidation-reduction reactions in radiolysis. M. A. Proskurnin, V. D. Orekhov, and E. V. Barelko. *Sessiya Akad. Nauk S.S.S.R. po Mir. ispol'zovaniyu Atomnoi Energii* 1955, *Zasedaniya Otdel. Khim. Nauk*, 41–61 (English summary, 62–3).—A review dealing with effects of radiation on oxidation-reduction reactions is supplemented by brief reports of new work. In the reduction of nitrates at. H is relatively inefficient; the initial efficiency is about 2 mols./100 e.v. and is essentially independent of pH. Introduction of HO radical acceptors leads to a conjugated reaction of reduction of nitrate with oxidation of the addend, such as glucose, in which case the efficiency of nitrate reduction reaches 6.7 mols./100 e.v., or participation of 13.5 atoms of H. Temp. over 35° also increases the efficiency by involvement of activated H_2O mols. Sensitization of oxidation of Fe^{++} with participation of O with greater participation at greater acidity is also observed; the max. efficiency of 60 equivs./100 e.v. for this reaction was attained independently of the nature of the acid used or of O pressure. Radiation-induced loss of color in aq. solns. of methylene blue can proceed either by reduction to the leuco form with yields of 1.5 mols./200 e.v. or by irreversible oxidation with yields of 1.0 mols./100 e.v. It is generally shown that HO_2 radical cannot oxidize aromatic compds. without oxidation promoters or carriers. Oxidation of anhyd. $PhCH_2OH$ appears to be a chain reaction with a strong post-radiation effect. 29 references. G. M. K.

6

IRM

(2)

Barelko, E. V.

Sensitization of radiolytic oxidation of benzene. M. A. Proskurnin and E. V. Barelko. *Symposium on Radiation Chem., Moscow* 1955, 85-8 (Engl. translation).—See *C.A.* 50, 4649g. B. M. R.

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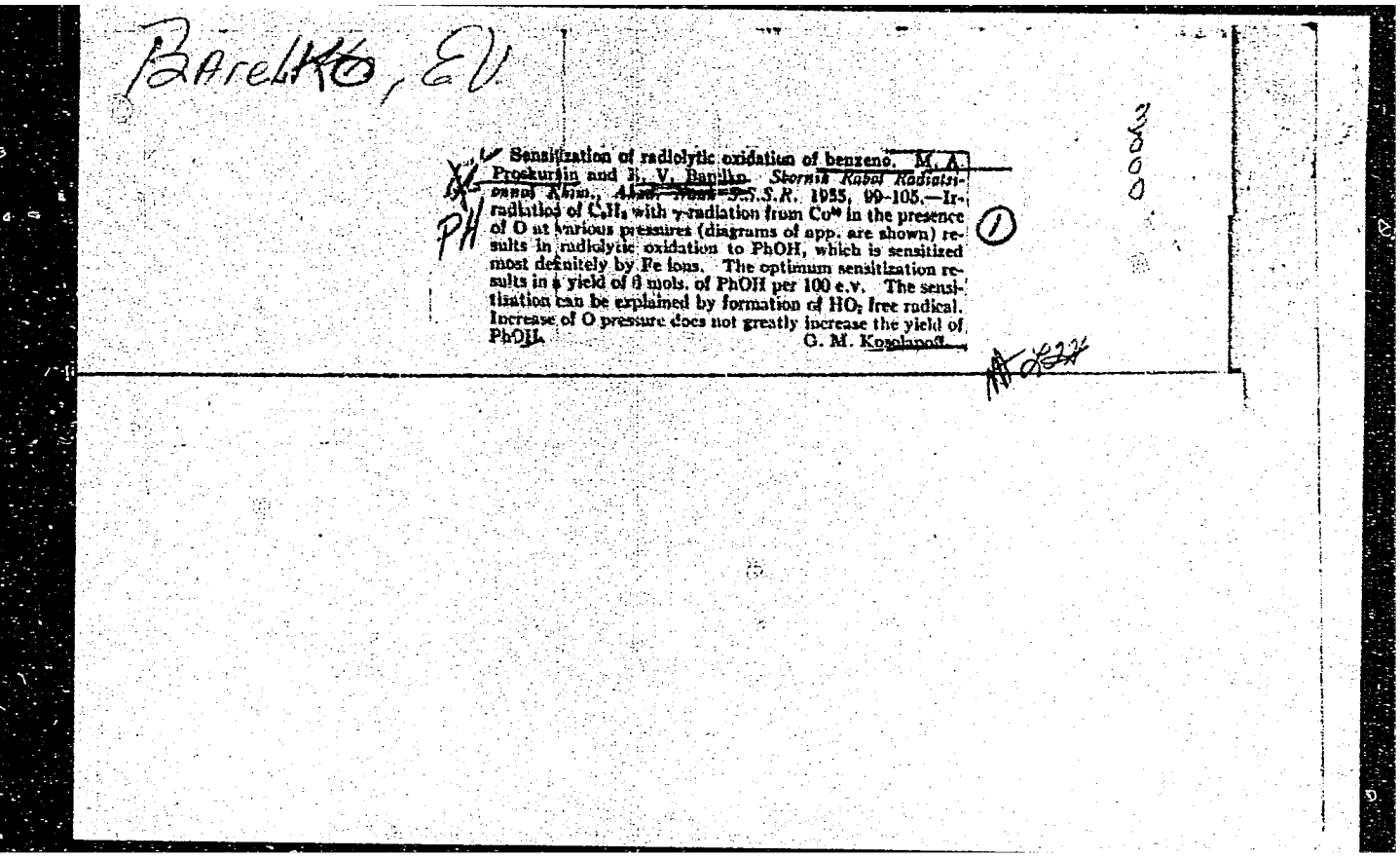
APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000203610016-2"



Barelko, E.V.

Sensitization of radiolytic oxidation of benzene. M. A. Proskurnin and E. V. Barelko. *Sbornik Rabot Radiatsionnoi Khim., Akad. Nauk S.S.S.R.* 1955, 99-105.—Irradiation of C_6H_6 with γ-radiation from Co^{60} in the presence of O at various pressures (diagrams of app. are shown) results in radiolytic oxidation to PhOH, which is sensitized most definitely by Fe ions. The optimum sensitization results in a yield of 6 mols. of PhOH per 100 e.v. The sensitization can be explained by formation of HO_2 free radical. Increase of O pressure does not greatly increase the yield of PhOH.
G. M. Kosolapoff

BARELKO, YE.V

4

Oxidation of organic compounds. M. A. Proskurnin, E. V. Barelko, and L. V. Abramova. *Sbornik Rabot Radiatsionnoi Khim., Akad. Nauk S.S.S.R.* 1955, 100-10.—Radiation from Co^{60} acting on the systems H_2O-O-BuOH and H_2O-O-$PhCH_2OH$ causes an oxidative attack, which yields H_2O_2 and the corresponding aldehydes, as well as BzOH in the last case. The yield of H_2O_2 is const. at 3.1 mols. per 100 e.v. The kinetic curves of accumulation of the aldehydes and the acid are shown. In addition an unknown phenolic substance is formed from benzyl alc.

G. M. Kosolapoff

CH

AID P - 3169

Subject : USSR/Chemistry

Card 1/1 Pub. 119 - 4/8

Authors : Proskurnin, M. A., V. D. Orekhov, and Ye. V. Barelko (Moscow)

Title : Induction and inhibition of oxidation-reduction reactions during radiolysis

Periodical : Usp. khim., 24, 5, 584-597, 1955

Abstract : Pure organic substances, usually not affected by radiation, undergo radiolysis when carbon tetrachloride, tetrachloroethylene or carbon tetrabromide are added. The addition of CCl_4 to styrene during polymerization results in a higher yield of the polymer due to formation of free radicals (CCl_3). On addition of glucose or glycerol to an oxygen-containing solution of methylene blue exposed to radiation, no change in the concentration (color) of the dye takes place. Eight tables, 4 diagrams, 26 references, 10 Russian (1905-1955).

Institution : None

Submitted : No date

BARELKO, E. V.

Conjugated radiation-chemical reactions in aqueous solutions. M. A. Proskurnin, V. D. Orekhov, and E. V. Barelko. *Doklady Akad. Nauk S.S.S.R.* 103, 651–3(1955).—The oxidation of Fe^{++} ions in the presence of Co^{60} (with an av. radiation intensity of 30 r./sec. g.) in a water soln. satd. with air was studied as a typical conjugated radiation-chem. reaction. The acidity of the soln. was 0.8*N*, the concn. of the Mohr salt $10^{-2}M$, and the Fe^{+++} yield was close to 16 equiv./100 e.v. and was unaffected by a higher acid concn. (Hochanadel and Ghormley, *C.A.* 47, 7913*i*). At higher initial Mohr's salt concn., and an acidity of 4*N*, the highest Fe^{+++} yield obtained exceeded 60 ions/100 e.v., if sufficient O was present. Results of a similar order were obtained in a reaction initiated by γ-radiation in the reduction of $NaNO_3$ to $NaNO_2$ in an alk., glucose-contg. soln. Glucose acts as an acceptor of the oxidizing fraction of the radiolysis water products. The irreversible oxidation of methylene blue in an acid soln. ($pH > 2$) can be carried out in a $10^{-4}M$ concn. of the dye with γ-radiation, and with a reduction of $10^{-3}M$ of Fe^{+++}. The dye was oxidized by the free OH radicals with a yield of about 1.6 mole/100 e.v. of energy absorbed by the soln.

W. M. Sternberg

Barelko, Ye. V.

AUTHOR: Kabanov, B.N., Barelko, Ye.V. 76-11-19/35

TITLE: Hydrogen Overvoltage on Magnesium (Perenapryazheniye vodoroda na magnii)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 11, pp. 2501-2506 (USSR)

ABSTRACT: On the strength of the experiments carried out it is shown that the hydrogen overvoltage on a mechanically protected magnesium surface in KOH solutions, which, as to amount, is near the overvoltage on a pure magnesium surface, has a constant a of the overvoltage equation, which is equal to 1.4 ± 0.1 V. It is shown that the hydrogen overvoltage on a magnesium surface oxidized in the solution is higher by 0.5 V in the case of a current density of 2.10^{-2} A/cm^2 than in the case of a protected one. In the case of oxidized magnesium the curve has a considerable break. It is further shown that the chlorine ions in the case of a high concentration reduce the hydrogen overvoltage on magnesium in diluted alcaline solutions, which is explained by the displacement of part of the oxygen by chlorine ions from the magnesium surface by adsorption. There are 6 figures and 9 references, 8 of which are Slavic.

Card 1/2

Hydrogen Overvoltage on Magnesium

76-11-19/35

ASSOCIATION: AN USSR, Institute for Physical Chemistry, Moscow (Akademiya nauk SSSR. Institut fizicheskoy khimii, Moskva)

SUBMITTED: August 6, 1956

AVAILABLE: Library of Congress

Card 2/2

BARELKO, E.V.

The effects of γ-radiation upon the cetane oxidation reaction. M. A. Proskurnin, Yu. L. Khmel'nitskii, E. V. Barelko, A. I. Slepneva, and I. I. Melekhonova. *Doklady Akad. Nauk S.S.S.R.* 112, 885-8(1957).—The octane oxidation with mol. O initiated by irradiation from Co^{60} was studied in an app. designed and illustrated which permitted the removal of the reaction initiator after the start of the reaction, and the sampling of the liquid during irradiation. The reaction was studied by analysing the products of the oxidation and deriving from the analysis the kinetic equation of the reaction. The best results were obtained with an irradiation for 30 min. The results were discussed in accordance with Emanuel's (*C.A.* 50, 18303f) view point on degenerated branching. W. M. Sternberg

BARELKO Ya.V.

20-1-20/44

AUTHORS: Barelko, Ya V., Kartasheva, L. I., Proskurnin, M A.

TITLE: On the Nature of the Insoluble Product Formed on Radiolytic Oxidation of Benzene in Water (O prirode nerastvorimogo produkta obrazuyushchegosya pri radiolititicheskom okislenii benzola v vode).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 1, pp. 74-77 (USSR).

ABSTRACT: The reactions of organic substances, as mentioned in the title, are in spite of the great interst which they offer little investigated. The chief difficulty consists in the isolation and identification of the reaction products which on that occasion form in small amounts. Stein & Weiss which had for the first time studied this reaction came to the conclusion that phenol and diphenyl are the chief products forming in this connection. But in later works it was proved that, in case that the process is carried out in an oxygen atmosphere, diphenyl cannot at all be detected. When, in the absence of oxygen, ions of variable valency are introduced into the system, the yield of diphenyl can sharply be reduced. These ions increase the yield of phenol independently of the presente or absence of O_2.

The problem of the formation of diphenyl remained unsolved. It should, in the case of formation in considerable amounts, fall out

Card 1/4

On the Nature of the Insoluble Product Formed on Radiolytic Oxidation of Benzene in Water. 20-1-20/44

as precipitation. Although none of the numerous papers deals with the chemical nature of the water-insoluble precipitation, it is a priori considered as diphenyl. The present paper is dedicated to the determination of this problem. The not only theoretical interest lied in the fact that the formation of precipitation does not only reduce the useful yield of phenol, but also renders difficult its isolation, since the precipitate in the solutions forms an extremely stable emulsion which is difficult to dissolve. Co^{60} served as source of the γ - radiation. As figure 1 shows, the amount of precipitate increases linear with increasing dose of radiation. In the spectrum of the precipitate (in ethanol solutions) a single maximum was discovered in the walve-length range λ = 25o mμ (figure 2, curve 1); the spectrum considerabley differed from that of diphenyl. Further differences of the precipitate toward diphenyl are given. The investigation of the properties of the former shows that it does not consist of diphenyl, but of its oxy- (most probably dioxy-) derivative. This result is of fundamental importance, as it forces to supplement the scheme of the radiolytic oxidation of benzene in water according to Stein & Weiss in its totality or at least in its essential aspects. If starting from this scheme, the formation of the last-mentioned substances can not be understood. The authors see a

Card 2/4

On the Nature of the Insoluble Product Formed on Radiolytic Oxidation of Benzene in Water.

possible way of explaining their formation in the fact that the free radical, oxyhexadienyl (C_6H_6OH), which forms on collision of the benzene molecule with a free hydroxyl is a sufficiently long-lived compound, in order to make possible the recombination of both such radicals among each other or of one such radical with the radical C_6H_7 or with a benzene molecule. A formation-scheme of the precipitate formed here might be:

$$C_6H_7 + C_6H_6 \dashrightarrow C_6H_8 \text{ —— } C_6H_5OH.$$

The missing discovery of diphenyl further leads to the assumption that the formation of phenol must not go through the stage of the formation of free phenyl either. E. g. it may be imagined that in the reaction of two oxyhexadienyl-radicals a parallel process of phenol formation may take place beside the joining of the rings. The thought rises that the polymeric compounds which form on radiation of pure benzene may also contain hydrated members, if this is assumed, the small radiation-chemical yield of hydrogen can in this case be explained.

On the Nature of the Insoluble Product Formed on Radiolytic Oxidation of Benzene in Water. 20-1-20/44

There are 3 figures, 1 table and 8 references, 2 of which are Slavic.

PRESENTED: By A. N. Frumkin, Academician, April 19, 1957

SUBMITTED: April 18, 1957.

AVAILABLE: Library of Congress.

Card 4/4

PROSKURNIN, M. A., OREKHOV, V.D., BAREIKO, Ye. V. and CHERNOVA, A. I.,
(Physicochemical Inst. im L. Ya. Karpov)

"Sensitization of Radio-chemical Processes in Water Solutions"

BARELKO, Ye. V., KARTASHEVA, I. I., NOVIKOV, P. D. and PROSKURNIN, M. A.

"Oxidation of Water Solutions of Benzene Under the Influence of Gamma Radiation" p.89

Trudy Transactions of the First Conference on Radiation Chemistry, Moscow, Izd-vo AN SSSR. 1958. 330pp.
Conference 25-30 March 1957, Moscow

5(4) SOV/20-121-4-27/[illegible]

AUTHORS: Proskurnin, M. A., Barelko, Ye. V., Kartasheva, L. I.

TITLE: Water as a Sensibilizer of the Radiation Initiation of the Oxidation Process of Benzene (Voda kak sensibilizator radiatsionnogo initsiirovaniya protsessa okisleniya benzola)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 121, Nr 4, pp [illegible] (USSR)

ABSTRACT: This paper deals with the oxidation of benzene in the aqueous phase according to a branched-chain mechanism and, especially, with the rôle of water as a sensibilizer of radiation initiation. This type of oxidation was discovered by the above-mentioned authors. Co^{60} was used as a source of radiation. The experiments were carried out in an autoclave of stainless steel. The average dosage rate was 140 r/sec. A diagram gives the dependence of the concentration of phenol on the radiation dose for various temperatures. For the purpose of comparison, the same diagram gives also the analogous curve for the oxidation of benzene if there is no water. In an aqueous solution the reaction has a distinct autocatalytic character already at the temperature of 165°.

Card 1/3

Water as a Sensibilizer of the Radiation Initiation of the Oxidation Reaction of Benzene

Resins are produced simultaneously with the production of phenol in the liquid phase. The kinetic curve of the production of phenol (for the case, that the radiation was finished 2 hours after the beginning of the experiment and that the reaction continued) is another proof of the fact that the investigated reaction is a branched chain process where the radiation may be used as an initiating factor. If there is no water, no transition to a self-accelerating course of the reaction at 220° under similar conditions can be observed. According to the authors' opinion, the use of chemically inert (but instable with respect to the radiation) substances (water is a special case) as sensibilizers of the radiation initiation of branched chain processes may be very important. There are 3 figures and 11 references, 6 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Physical-Chemical Research Institute imeni L. Ya. Karpov)

SOV/20-121-4-27/54

Water as a Sensibilizer of the Radiation Initiation of the Oxidation Process of Benzene

PRESENTED: March 15, 1958, by V. N. Kondrat'yev, Academician

SUBMITTED: March 12, 1958

Card 3/3

PROSKURNIN, M.A.; BAREIKO, Ye.V.; KARTASHEVA, L.I.

Direction of the process of benzene oxidation in aqueous solution under the influence of radiation. Probl.fiz. khim. no.2:177-182 '59. (MIRA 13:7)

1. Laboratoriya radiatsionnoy khimii Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta im. L.Ya.Karpova.
(Benzene) (Oxidation) (Gamma rays)

KUCHERA, Ya. (Chekhoslovakiya); BARELKO, Ye.V.; KARTASHEVA, L.I.; KOMAROV, P.N.; PROSKURNIN, M.A.

Decomposition products of phenol formed in the radiolysis of benzene in aqueous solution. Probl.fiz.khim. no.2:183-188 '59. (MIRA 13:7)

1. Laboratoriya radiatsionnoy khimii Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta imeni L.Ya.Karpova.
(Benzene) (Phenols)

S/020/61/136/[illegible]/031/037
B004/B056

AUTHORS: Kartasheva, L. I., Bulanovskaya, Z. S., Barelko, Ye. V., Varshavskiy, Ya. M., and Proskurnin, M. A.

TITLE: Investigation of Radioactive Benzene Oxidation in Aqueous Solution by Means of Tagged Atoms

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 144-147

TEXT: The authors discuss the process of interaction between benzene and the products of water radiolysis with reference to the results obtained in Refs. 1 - 9. In discrepancy to the scheme of I. Stein and J. Weiss (Ref. 7) assuming $C_6H_6 + OH^{\cdot} \longrightarrow C_6H_5^{\cdot} + H_2O$; $C_6H_6 + H^{\cdot} \longrightarrow C_6H_5 + H_2$ they regard direct $OH^{\cdot}$ and $H^{\cdot}$ addition with $C_6H_7^{\cdot}$ and $C_6H_6OH^{\cdot}$ formation as being more probable. The authors attempt to explain this problem by examining benzene radiolysis in the presence of heavy water. If addition of $H^{\cdot}$ and $OH^{\cdot}$ to C_6H_6 occurs, the forming insoluble substance is found to contain deuterium not only in the OH groups but also in the C=H bonds in which no isotope exchange takes

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place unless under irradiation (Ref. 10). The residual content of C-bound D in the substance was determined by "washing out" deuterium from the OH groups by means of a solvent of ordinary hydrogen composition (exchange OD⇌OH). The ratio OD : CD expresses the probability of $OH^{\cdot}$ and $H^{\cdot}$ addition. Benzene and water containing 26.7 atom per cent were irradiated from Co^{60}; γ-dose was 170 r/sec, time of irradiation 350 hours. The mixture which previously was degassed by repeated freezing was irradiated in glass ampoules. The white substance that had formed was centrifuged off and divided into three portions after drying. In the first portion deuterium was directly determined. The second portion was dissolved in alcohol and evaporated for 14 times in order to remove the deuterium of the hydroxyl groups by isotopic exchange. Subsequently, the deuterium content was determined. The third portion was repeatedly treated with soda solution in order to remove phenol traces and to attain isotopic exchange in the hydroxyl groups. Furthermore, deuterium was also determined in the benzene which had not undergone reaction. The following results were obtained: Table 1

Investigation of Radioactive Benzene Oxidation in Aqueous Solution by Means of Tagged Atoms

S/020/61/136/001/011/037
B004/B056

substance	D content (atom per cent)
solid substance, without treatment	11.2
solid substance, treated with alcohol	3.8
solid substance, treated with soda	3.8
benzene	-

The substance forming on radiolysis contains D in OH as well as in C-H bond. The ratio OH : CH is about 2 : 1. Since no deuterium was found in benzene it is concluded that no direct isotopic exchange takes place between benzene and water. Deuterium enters benzene only by addition of the radiolysis products of water. The present data confirm formation and recombination of $C_6H_6D^{\cdot}$ and $C_6H_6OD^{\cdot}$ radicals. There are 1 table and 11 references: 7 Soviet, 2 British, and 1 Japanese.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of Physics and Chemistry imeni L. Ya. Karpov)

PRESENTED: July 16, 1960 by V. A. Kargin, Academician

SUBMITTED: July 11, 1960

Card 3/3

S/844/62/000/000/055/129
D214/D307

AUTHORS: Barelko, Ye. V., Kartasheva, L. I. and Prosvirnin, N. A. (deceased)

TITLE: Kinetics of the initial stage of the radiochemical chain oxidation of benzene

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 221-226

TEXT: Radiation-oxidation of C_6H_6 at elevated temperatures proceeds by a chain reaction in which H_2O behaves as an initiator ($H_2O \rightarrow H^{\cdot} + {}^{\cdot}OH$). Source of the radiation was Co^{60}. Kinetic curves for the process $C_6H_6 \longrightarrow C_6H_5OH$ exhibit two distinct parts: the initial inductive period and the autoacceleration period. The initial rate of this process and the phenol yields increase with rising temperature and with rising intensity of radiation. The radiolysis products

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($\dot{H}$ + $\dot{O}H$) react with C_6H_6 to give secondary radicals $\dot{C}_6H_6OH$ and $\dot{C}_6H_6H$. In the presence of O_2 the secondary radicals formed are $\dot{C}_6H_6OHO_2$, $H\dot{O}_2$ and $\dot{C}_6H_6O_2H$. These radicals give phenol by disproportionation with a yield of 8 - 10 moles/100 ev. In the $C_6H_6-H_2O$ system an increase in $V_{H_2O}/V_{C_6H_6}$ (where V = volume) lengthens the inductive period since less of the branching agent is extracted into the benzene phase. An initial addition of phenol to the H_2O phase further reduces the induction period; in dry benzene the added phenol is partially destroyed, which shows that H_2O is necessary for the progress of the reaction. There are 7 figures.

ASSOCIATION: Fiziko-khimicheskoy institut im. L. Ya. Karpova (Physico-Chemical Institute im. L. Ya. Karpov)

L 15477-63 EPF(c)/EWT(m)/BDS AFFTC/ASD - Pr-4 RM/WW/JXT(IJP)
ACCESSION NR: AP3005458 S/0204/63/003/004/0609/0614

AUTHORS: Komarov, P. N.; Barelko, Ye. V.; Proskurnin, M. A. (Deceased)

TITLE: Oxidation of n-butanol in the liquid phase initiated by gamma-irradiation with Co sup 60

SOURCE: Neftekhimiya, v. 3, no. 4, 1963, 609-614

TOPIC TAGS: n-butanol oxidation, n-butanol, butanol, Co sup 60, gamma-irradiation

ABSTRACT: Authors studied the oxidation of n-butane initiated by Gamma-radiation at temperatures between 104 and 150C with oxygen pressure at 40 atm. Oxidation was conducted under static conditions in a steel reactor with a volume of 45ml. The source used to produce Gamma-radiation was Co sup 60. It was shown that the irradiation effect causes a shortening of induction period, as has previously been demonstrated with other processes. The change in concentration of the reaction products at the beginning of the reaction, and the effect of the addition of these products as a function of the process

Card 1/2

L 15477-63

ACCESSION NR: AP3005458

2

rate was investigated. It was established that peroxide compounds and not aldehydes are the branching agents. The induction period is only slightly dependent upon the force of the irradiation dose. Formation of peroxides and their maximum concentration decreases with an increase in temperature. The qualitative relationship of these phenomena was demonstrated with the theory of chain oxidation reaction. The activation energy value of the branching process was evaluated, and it was found to be quite low. The interruption of irradiation at a certain reaction stage results in a sharp increase of products of incomplete oxidation. "The authors express their gratitude to V. L. Tal'roze for his valuable advise during the evaluation of results." Orig. art. has: 1 table, 5 figures, and 5 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific-research institute for chemistry and physics)

SUBMITTED: 7Jan63 DATE ACQ: 06Sep63 ENCL: 00
SUB CODE: CH NO REF SOV: 015 OTHER: 005

Card 2/2

L 8102-66 EWT(m)/EWP(j)/EWA(h)/EWA(1)

ACC NR: AP5026459 SOURCE CODE: UR/0204/65/005/005/0715/0720

AUTHOR: Komarov, P. N.; Barelko, Ye. V.; Proskurin, M. A. (deceased)

ORG: Scientific Research Physico-chemical Institute im. L. Ya. Karpova (Nauchno-issledovatel'skiy fiziko-khimicheskiy institut)

TITLE: Radiochemical oxidation of butanol in aqueous solution at elevated temperature

SOURCE: Neftekhimiya, v. 5, no. 5, 1965, 715-720

TOPIC TAGS: aliphatic alcohol, gamma radiation, oxidation, oxidation kinetics

ABSTRACT: Effects of temperature, solution concentration and gamma ^{60}Co radiation dosage on the kinetics of the radiochemical oxidation of aqueous solutions of butanol were investigated. Changing the alcohol concentration from 0.053 to 0.76 mol/l changed the oxidation product yield only 15%. Increasing the reaction temperature led to the development of chain oxidation reactions. At temperatures above 100 C the chain reaction rate was only about an order less than in the oxidation of pure alcohol. The induction period was somewhat longer and the reaction rate during the induction period was 2-3 times less in the oxidation of aqueous solutions than in the oxidation of pure alcohol. During the initial period the reaction rate was

Card 1/2 UDC: 542.943+541.15:547.264

L 8102-66
ACC NR: AP5026459

proportional to the irradiation dosage, indicating the radiochemical yield is practically independent of dosage rate. "We thank V. L. Tal'roz for assistance in discussing the results." Orig. art. has: 4 figures, 1 table, and 7 equations

SUB CODE: OC, TD/ SUBM DATE: 25Apr64/ ORIG REF: 012/ OTH REF: 005

Card 2/2

BARELKOWSKI, Jan, mgr inz.

Compensation of magnetizing current in magnetic circuits.
Pomiary 8 no.10:462-463 O '62.

1. Katedra Elektroenergetyki, Politechnika, Gdansk.

BAREM, V.A.

7.2-148 551.521.1:621.47

Conquest of solar energy. *Current Science*, Bangalore, India, 24(2):42, Feb. 1955. DWB —Use of huge paraboloid mirrors to harness solar energy in the Tashkent region was reported by V. A. BAREM (head of the Heliotechnical Laboratory at the G. M. Krzhizhanovsky Power Institute at Tashkent) at a UNESCO and National Institute of Sciences symposium on use of waste energy in arid zones. Solar kitchens, solar stills for producing fresh water from salt, solar heaters for canneries, and solar steam plants are reported to be accomplished facts. *Subject Headings:* 1. Solar energy utilization 2. Tashkent Heliotechnical Institute 3. Tashkent, U.S.S.R. I. Barem, V. A.—N.R.

GP

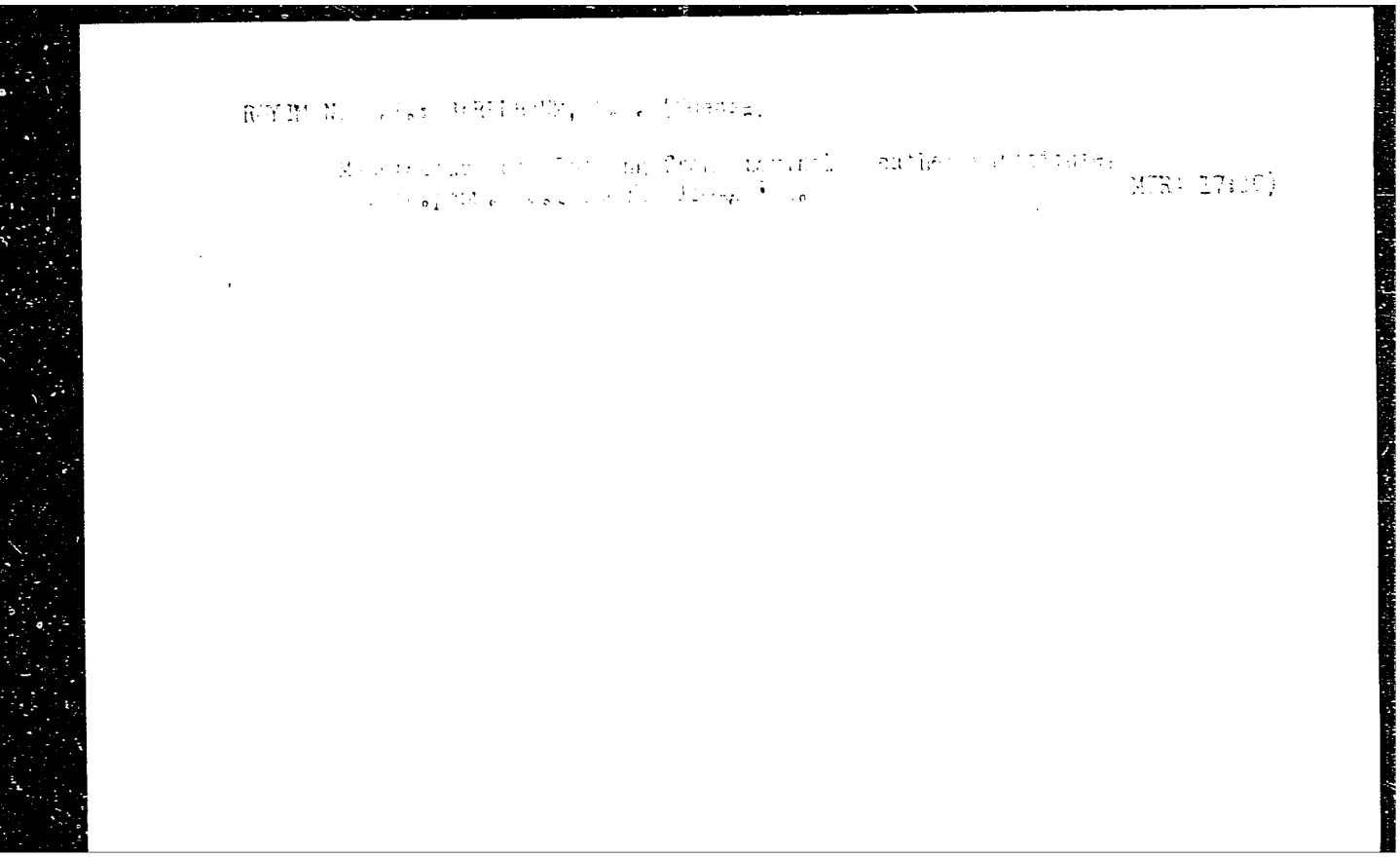
BAREMBO, Konstantin Nikolayevich; BERNSHTEYN, Lyudmila Mikhaylovna; RUBO, L.G., red.; BORUNOV, N.I., tekhn. red.

[Drying, saturation, and compounding of electrical machinery windings] Sushka, propitka i kompaundirovanie obmotok elektricheskikh mashin. Moskva, Gos. energ. izd-vo 1961. 367 p. (MIRA 15:2)
(Electric machinery--Windings)

THUSOV, V.V.; BARENBAUM, I.I.; [illegible]

Functional status of the principal digestive glands in patients with thyrotoxicosis during I^{131} therapy. Med. rad. 9 no.11:7-15 N '64. (MIRA 18:6)

1. Kafedra gospital'noy terapii Odesskogo meditsinskogo instituta.



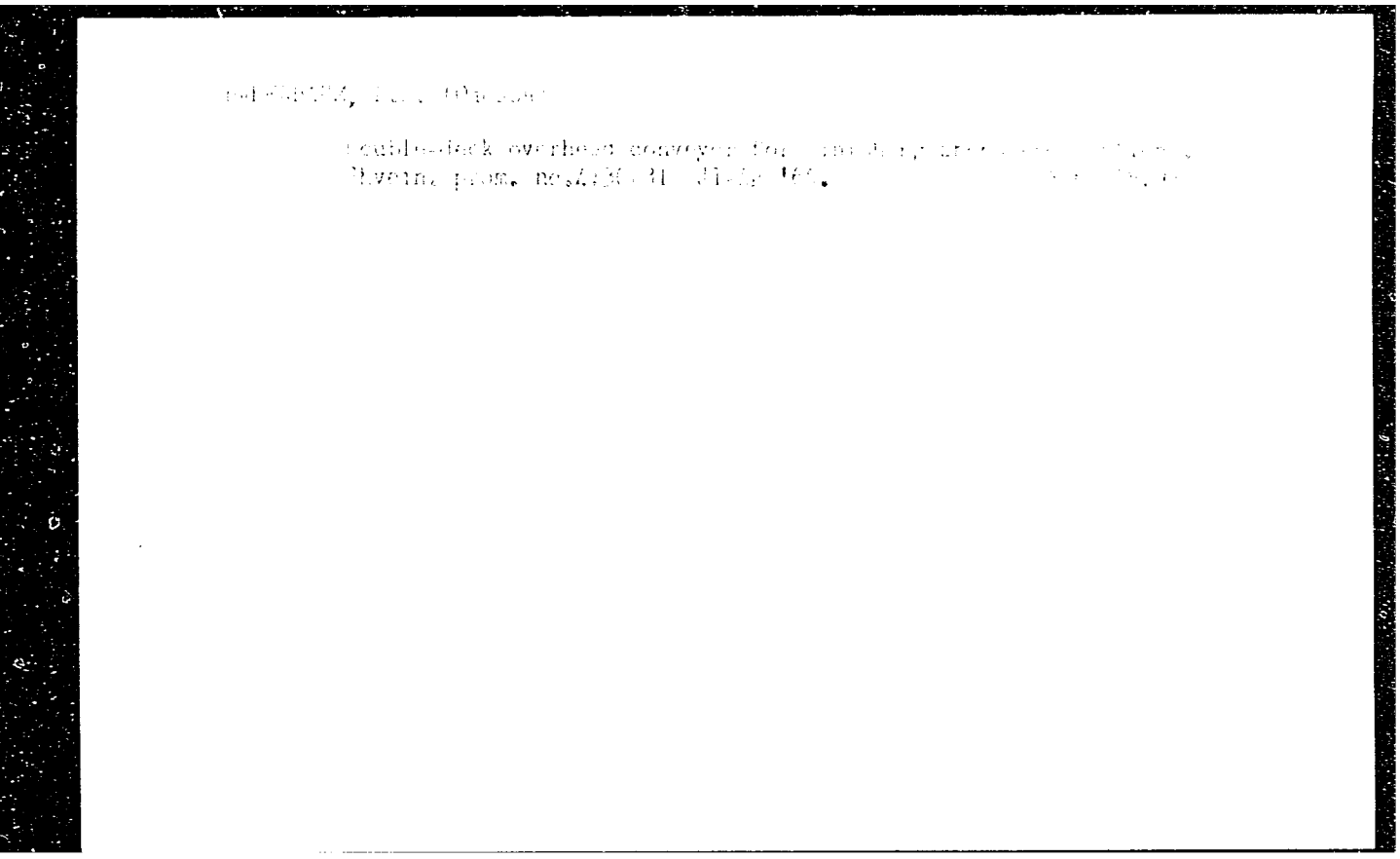
BARENBAUM, L.S. (Odessa)

Manufacture of shoulder pads of a new shape without the use of interlining and flannel. Shvein. prom. no.1:22-23 (MIRA 16:4)

(Tailoring--Equipment and supplies)

BARENBAUM, L.S. (Odessa)

Indicator for the Class 85 machine. Shvein.prom. no.5:29 S-O '63. (MIRA 16:12)



[redacted], L.S.

Mechanization of production processes in the "Voroshilov" Clothing Production Combine in Odessa. Leh. prom. no.4: 34-36 O-D '65. (MIRA 19:1)

BARENBLATT, G. I.

Barenblatt, G. I. On a method of solution of the equation of heat conduction. Doklady Akad. Nauk SSSR (N.S.) 72, 667–670 (1950). (Russian)

The author considers the equation $y''+\lambda q(x)=0$, where $q(x)$ satisfies the conditions (1) $q(x)\geqq 0$ and can be zero only for $x=0$, (2) $q(x)$ has continuous second derivatives everywhere, and (3) near the origin $q(x)=a_0x^m[1+R(x)]$, $R(x)\to 0$ for $x\to 0$, $m\geqq 0$. Using a method introduced by Levitan [see the preceding review] and a result due to Titchmarsh [Eigenfunction Expansions . . . , Oxford, 1946; these Rev. 8, 458] the following theorem is proved: If $q(x)$ satisfies the conditions (1), (2), (3), $q'=O(q^{\alpha})$ where $\alpha<\frac{3}{2}$, q'' does not change sign and $\int_0^{\infty}q^{-1/2}dx$ diverges, then the spectral operator $q^{-1}d^2/dx^2$ is continuous for $\lambda\geqq 0$. If $q(x)$ satisfies the conditions of the above theorem, then it is shown that the equation $\partial^2T/\partial x^2=q(x)\partial T/\partial t$, subject to the conditions $T(x,0)=0$, $T(0,t)=\phi(t)$, has a solution expressed as an integral depending on a solution of the ordinary differential equation. A similar representation is given for the heat problem in which the boundary condition is replaced by $\partial T(0,t)/\partial x=-f(t)$. Solutions are explicitly exhibited for an example in which $q(x)=x^m$. For $m=0$, the well-known solutions are obtained. *C. G. Maple* (Washington, D. C.).

Source: Mathematical Reviews, Vol. 12, No. 3

BARENBLATT, G.I.

Barenblatt, G. I. On the solution of the equation of heat conduction with a nonhomogeneous boundary condition. Doklady Akad. Nauk SSSR (N.S.) 74, 201–204 (1950). (Russian)

The author considers two methods of solution of the heat equation $\partial^2 T/\partial x^2 = q(x)\partial T/\partial x$ $(0 \leqq x \leqq \infty)$, where T is subject to the boundary conditions,

$$T(0, t)\sin\alpha - \frac{\partial T(0, t)}{\partial x}\cos\alpha = \phi(t); \quad T(x, 0) = f(x);$$

$$\frac{\partial T(\infty, t)}{\partial x} = 0.$$

It is assumed that $q(x)$ satisfies the conditions of an earlier paper [same Doklady (N.S.) 72, 667–670 (1950); these Rev. 12, 183]. In both methods the substitution $T = T_1 + T_2$ is made, where T_1 and T_2 each satisfy the differential equation. In the first method T_1 and T_2 satisfy the above boundary conditions with $\phi(t) \equiv 0$ and $f(x) \equiv 0$, respectively. For the second method, the boundary conditions are as follows:

$$T_1(0, t)\sin\alpha - \frac{\partial T_1(0, t)}{\partial x}\cos\alpha = 0; \quad T_1(x, 0) = f(x) - K;$$

$$\frac{\partial T_1(\infty, t)}{\partial x} = 0,$$

$$T_2(0, t)\sin\alpha - \frac{\partial T_2(0, t)}{\partial x}\cos\alpha = \phi(t); \quad T_2(x, 0) = K;$$

$$\frac{\partial T_2(\infty, t)}{\partial x} = 0,$$

where K is some constant. In both instances T_1 and T_2 are constructed by the methods of the previous paper. The special case $q(x) = x^m$ is given as an example.

C. G. Maple (Washington, D. C.).

Source: Mathematical Reviews, Vol 12 No. 4

BARENBLATT, G.I.

Barenblatt, G. I., and Levitan, B. M. On a generalization of Poisson's formula from the theory of heat conduction. Doklady Akad. Nauk SSSR (N.S.) 79, 917–920 (1951). (Russian)

The authors give a generalization of the integral formula of Poisson which permits them to construct solutions for the boundary value problems for the equation of heat conduction. The fact that the solution is representable in the form of a generalized integral imposes on it certain conditions not usually associated with the heat equation (in particular, the vanishing at infinity). As an example, they construct a solution of the equation $q(x)\partial T/\partial t = \partial^2 T/\partial x^2 + Q(x, t)$ for the boundary conditions $T(0, t)\cos\alpha - x^{-1}T(0, t)\sin\alpha = \phi(t)$, $T(x, 0) = f(x)$. *C. G. Maple* (Washington, D. C.).

Source: Mathematical Reviews, Vol 13 No. 4

J.M. Mechanics of Fluids

18/87 532.546

On Certain Unstable Movement of Fluid and Gas in Porous Media

Prikl.Mat.Mekh. 4o(1),67-78 '76

G. I. Barenblatt U.S.S.R.

Using Leibenson's equation for a laminar flow of gas in a homogeneously porous medium, and that of Muskat - for a one-dimensional flow of liquid in a porous medium under the influence of gravity the author, with aid of the theory of dimensions, obtained precise solutions of the equation of the flow of gas in a porous medium, with initial and boundary conditions which are of certain practical interest. Numerical example is offered of the propagation of gas in isothermic plane waves, while its density, in the initial plane, grows according to a linear law. The case of plane waves with cylindrical and spherical symmetry of propagation is also examined quantitatively. (Bibl.4)

Nekotorye Osobennosti Komponovki Radiatorov v Kryle Samoleta (Some Particulars of the Airplane Wing Radiator Group). IU. G. Limonad. Full-scale tests were made on a trapezoidal wing with radiator openings in the leading edge, in order to determine the causes of interferency between the duct and the wing and to ascertain the aperture shape causing the least interference. Reduction in lift attributable to placing the entrance apertures too near the upper surface of the wing, and duct losses, were lessened by lowering the entrance aperture and reducing its width. Improved performance and a saving in weight were obtained by redesigning the duct exits. The preservation of the flow around the wing surfaces was shown to be one of the most important factors in the design of wing radiators. Tekhnika Vozdushnogo Flota, February, 1945, pp. 13-15, 4 illus.

USSR/Mathematics - Heat Conduction, Diffusion May/Jun 52

"Some Boundary-Value Problems for the Equation of Turbulent Heat-Conduction," G. I. Barenblatt, B. M. Levitan

"Iz Ak Nauk, Ser Matemat" Vol XVI, No 3, pp 253-280

Studies expansion of functions, given within the interval (0,∞) into an integral of the Fourier integral type according to eigenfunctions of the eq $y'' + \lambda^{m+2} q(x)y = 0$ under the assumption that the function $q(x)$ satisfies specified conditions.

217T68

BARENBLATT, G. I.

The results obtained are applied to the soln of the eq of heat-conduction or diffusion in a turbulent flow. Received 1 Nov 51. Submitted by Acad S. N. Bernshteyn.

217T68

BARENBLATT, G. I.

Mathematical Reviews
Vol. 14 No. 7
July - August, 1953
Mechanics.

Barenblatt, G. I. On self-similar motions of a compressible fluid in a porous medium. Akad. Nauk SSSR. Prikl. Mat. Mekh. 16, 679-698 (1952). (Russian)

The density ρ of a gas is assumed to satisfy

$$c\frac{\partial \rho}{\partial t}+x^{-s}\frac{\partial}{\partial x}\left[x^{s}\left(-\frac{\partial \rho^{k}}{\partial x}\right)^{m}\right]=0,$$

a special one-dimensional form of Leibenson's equation for turbulent filtration where it is required that $\partial\rho/\partial x \leqq 0$ [L. S. Leibenson, Izvestiya Akad. Nauk SSSR. Ser. Geograf. Geofiz. 9, 7-10 (1945); these Rev. 7, 95]. The index $s=0$ for the plane wave case, $s=1$ when there is cylindrical symmetry, and $s=2$ for the spherically symmetric case. The filtering medium determines the constant c, m characterizes the turbulence of the flow ($0.5 \leqq m \leqq 1$, with $m=1$ for laminar flow), and $k-1=\gamma$ is the index of polytropy of the gas. With the conditions $\rho(x, +0)=0$ for $x>0$, and

$$\lim_{x\to 0} x^{s}\left(-\frac{\partial \rho^{k}}{\partial x}\right)^{m}=\gamma l^{q},$$

the author finds the form of the solutions $\rho(x)$. He shows essentially that when $km>1$, the velocity of propagation of the gas front is finite, i.e., the curve $\rho(x)$ meets the x-axis. But when $km<1$, the gas front is propagated with infinite velocity.

R. E. Gaskell (Seattle, Wash.).

LB
10/28/54

BARENBLATT, G.I.

714. Barenblatt, G. I., Movement of suspended particles in a turbulent flow (in Russian), *Prik. Mat. Mekh.* 17, 3, 261-274, May/June 1953.

The problem of the suspension of small concentrations of particles in turbulent flow is studied. The method is an important extension of that of Velikanof in which, using Kolmogoroff's theory of an energy balance, the effect of the suspended particles on the mean flow is deduced. In the present paper, the reaction on the energy fluctuations in the flow is studied and, in particular, the case of two dimensional steady flow is solved.

This method, while being doubtless more rigorous than the diffusion theories of suspension, is not conveniently applicable to practical use. A. Gordon-Foster, England

BARENBLATT, G. I.

USSR/Mathematics - Aerodynamics Jul/Aug 53

"The Propagation of Instantaneous Excitations in a Medium With Nonlinear Dependence of Stresses Upon Strains," G. I. Barenblatt, Moscow

Priklad Matem i Mekhan, Vol 17, No 4, pp 455-460

Notes that the establishment and treatment of the principal problems of complex media which deviate from Hook's law belong to Kh. A. Rakhmatulin (Uch Zapiski MGU (Sci Notes of Moscow State Univ), No 152, 1951). Studies the propagation of plane waves in a

276T83

half-space whose material satisfies an arbitrary relation between stresses and strains. Employs a method of dimensional analysis used by L. I. Sedov (Metody Podobiya i Razmernosti v Mekhanike, GITTL, 1951). Acknowledges the advice of Kh. A. Rakhmatulin and L. I. Sedov.

BARENBLATT, G.I.

USSR

/2773. Barenblatt, G. I., On a class of exact solutions of the plane one-dimensional problem of unsteady filtration of a gas in a porous medium (in Russian), *Prik. Mat Mekh.* 17, 739-742, 1953.

In plane one-dimensional nonstationary filtration of a gas in a porous medium, the density of the gas satisfies the equation $\partial\rho/\partial t = a^2\partial^2\varphi(\rho)/\partial x^2$, where $\varphi(\rho) = \int^\rho \rho\, dp$, p being the pressure. Author assumes a solution of the form $\rho = \rho(\xi)$, where $\xi = x - ct$ ($c = \text{const} \neq 0$), and after two quadratures he finds ξ. Finally, the significance of various terms of the solution is studied and it is linked to the author's previous work.

R. E. Gaskell, USA

USSR/Engineering - Hydromechanics FD-1130

Card 1/1 Pub. 41-11/17

Author : Barenblatt, G. I., Moscow

Title : Some problems of non steady state filtration

Periodical : Izv. AN SSSR. Otd. tekh. nauk 6, 97-110, Jun 1954

Abstract : Studies problem of non steady state movement of gas in porous medium and also problem of non steady state movement of ground water, including axially-symmetric movements and plane movements. Investigates class of problems corresponding to zero initial pressure--so-called filtration in dry soil. Gives methods for approximate solution of problems satisfying a broad group of boundary conditions. Graphs; tables. Seven references.

Institution : Institute of Petroleum of the Academy of Sciences of the USSR

Submitted : July 30, 1954

BARENBLATT, G. I.

Distr: 4F1/4F2

2875. Barenblatt, G. I., Some approximation methods for the theory of the unidimensional unsteady filtration of a liquid in the presence of elasticity (in Russian), *Izv. Akad. Nauk SSSR, Otd. Tekh. Nauk* no. 9, 31-49, 1954; *Ref. Zh. Mekh.* no. 11, 1956, Rev. 7623.

An approximate method is discussed for the solution of unidimensional unsteady problems in the theory of heat transmission, which closely resembles the Karman method in the theory of the boundary layer. The method is most effective in cases where the relationship of the required function to the space coordinate x, is monotonous.

In the presence of elasticity, the filtration pressure P satisfies the equation of heat transmission. In this regard, the boundary conditions present the greatest interest, i.e.,

$$P(x, t)|_{x=L} = \varphi(t), \quad (\partial P/\partial x)|_{x=L} = \psi(t)$$

For a linear flow, the required function P is represented by a polynomial in whole nonnegative powers of x, and with coefficients depending on the time t. For a plane-radial flow the equation of P also contains a logarithmic term, while for a centrally symmetrical flow, a term of the form $x^{-1}f(t)$ is included. The coefficients are determined by utilizing the conditions at the boundaries, furnishing a system of algebraic equations and instantaneous integral relationships, resembling the relationships developed by L. G. Loitsianski [*Prikl. Mat. Mekh.* 13, no. 5, 1949]. The latter further form a system of ordinary differential

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BARENBLATT, G. I.

4
2

equations of the first order. At $t = 0$, it is assumed that P = const, or a relationship of $P(x)$ corresponding to a steady flow.

The (calculation) process is conventionally divided into two stages. It is assumed that, initially, the perturbation originating at the boundary is manifested only in a particular region $x \leq l$, adjacent to the boundary. The values of l for t = const grow with approach to the rigorous solution; i.e., with increasing number of terms in the equation of P. Selecting a particular number of terms for $P(x, t)$, the extent of the region $l(t)$ is determined from the aforesaid system of equations and conditions $\partial^m P/\partial x^m$, ($m > 1$ at the variable boundary $x = X(t)$.

The approach of the perturbation to the further (outer) boundary initiates the second stage, in which the unperturbed region vanishes.

The question of the optimum selection of the number and character of the boundary conditions, and the corresponding number and form of the integral relationships, is insufficiently explained.

The examples included, for the calculation of the inflow to a borehole, show the high efficacy of the method. A sufficient degree of accuracy was obtained when the pressure was represented in the form of a trinomial, satisfying the values of P and the first derivatives at the boundary, as well as the integral relationship for the material balance.

D. A. Efros

Coursnyi Neftyanoi Zhurnal, USSR

Translation, courtesy Ministry of Supply, England

2/2

BARENBLATT, G.I.

USSR/Physics - Suspension Pumps FD-767

Card 1/2 : Pub 129-4/24

Author : Kolmogorov, A. N.

Title : M. A. Velikanov's new variant of his gravitational theory of motion of suspension pumps

Periodical : Vest. Mosk. un., Ser. Fizikomat, i yest. nauk, Vol 9, No 2, 41-45 Mar 1954

Abstract : The author claims that the new variant (M. A. Velikanov, "Motion of suspension pumps," Vest. Mosk. un., No. 8, 1953) of Velikanov's" gravitational theory" of the transfer of suspended particles by a turbulent current, first proposed by Velikanov in 1944, leads to conclusions so paradoxical and so roughly inconsistent with daily experience that the theory's defective basis has become particularly evident. Velikanov's fundamental idea of the role of the "energy of suspension", which is essentially correct, is here analyzed for any errors and also for the possibility of its more correct development.

FD-767

: The author refers to a related work of G. I. Barenblatt ("Motion of suspended particles in a turbulent current," Prikl. mat. i mekh., 17, No. 3, 261-272, 1953).

Institution : [no institution]

Submitted : December 16, 1953

BARENBLATT, G. I.
USSR/Physics - Filtration in porous medium

FD-641

Card 1/1 : Pub. 85 - 8/12

Author : Barenblatt, G. I. (Moscow)

Title : Approximate solution to the problems of one-dimensional nonstationary filtration in a porous medium

Periodical : Prikl. mat. i mekh., 18, 351-370, May/Jun 1954

Abstract : Gives exact and approximate solutions to the equation, similar to that of Boussinesq, describing isothermal filtration of gas, whose conclusions are also applicable to the motion of ground waters. Fourteen references. Thanks S. A. Khristianovich.

Institution : Institute of Petroleum, Academy of Sciences of the USSR

Submitted : February 2, 1954

BARENBLATT, G. I.

F 3

Aero Sci

Phys

Barenblatt, G. I. On limiting self-similar motions in the theory of unsteady filtration of a gas in a porous medium and the theory of the boundary-layer. Prikl. Mat. Meh. 18 (1954), 409–414. (Russian)

The present work is a continuation of the author's previous communication [Prikl. Mat. Meh. 16 (1952), 679–698; MR 14, 699]. Similar methods have been employed before by K. P. Stanjukovič [C. R. (Dokl.) Acad. Sci. URSS (N.S.) 48 (1945), 310–312; MR 7, 446]. The author obtains limiting self-similar solutions of the equation $\partial p/\partial t = a^2 \partial^2 p/\partial x^2$, subject to the conditions $p(x, -\infty) = 0$, $p(0, t) = p_0 e^{\sigma t}$, where p denotes the pressure. By means of dimensional analysis and some formal transformations, the author obtains the solution in the form $p = p_0 e^{\sigma t} f(x[a^2 p_0 e^{\sigma t} \sigma^{-1}]^{-\frac{1}{2}})$, where

$$(*) \qquad d^2f/d\xi^2 + \tfrac{1}{2}\xi\, df/d\xi - f = 0;\ f(0) = 1,\ f(\infty) = 0.$$

The numerical solution of this equation is given in the paper reviewed below. Other boundary-conditions for the pressure equation are also noted. The author concludes his analysis by obtaining limiting self-similar

Barenblatt, G.I.

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solutions to the boundary-layer equation [cf. S. Goldstein, Proc. Cambridge Philos. Soc. 35 (1939), 338–340].

K. Bhagwandin (Oslo).

Barenblatt, G. I. On some problems of unsteady filtration. Izv. Akad. Nauk SSSR. Otd. Tehn. Nauk 1954, no. 6, 97–110. (Russian)

In this paper, the author studies the unsteady filtration through a layer. The equation is identical with that given in the preceding paper. The boundary-conditions are $p(x, 0)=0$, $p(0, t)=p_0(t)=t^{\alpha}$ (α, $\sigma=$ const ≥ 0). The equation for $f(\xi)$ is the same as that of the previous paper, except that the third term in (*) is multiplied by $\lambda=\alpha/(\alpha+1)$. Numerical values are given for different values of the parameter λ (for 0.00, 0.05, ..., 1.00). In particular, the author considers the case of axial-symmetry. Here, too, numerical results are given for the same values of λ. The flux is also evaluated.

K. Bhagwandin (Oslo).

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KRYLOV, A.P.; BARENBLATT, G.I.

[On the oil stratum elasto-plastic drive.]Ob uprugo-plasticheskom rezhime neftianogo plasta; doklady na IV Mezhdunarodnom neftianom kongresse v Rime. Moskva, Izd-vo Akademii nauk SSSR, 1955. 29 p.
(Oil fields) (Permeability) (MLRA 8:10)

15-57-1-854

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 1, pp 134-135 (USSR)

AUTHOR: Barenblat, G. I.

TITLE: The Results of Our Work (Rezul'taty nashey raboty)

PERIODICAL: V sb: Metody uvelicheniya nefteotdachi plastov. Moscow, Gostoptekhizdat, 1955, pp 97-99.

ABSTRACT: The author briefly describes his theoretical work on the hydrofract process, done at the Petroleum Institute of the Academy of Sciences, USSR, under the guidance of S. A. Christianovich. He proposes that there exists a seam of clay in the region of the productive stratum that, by virtue of its plasticity, flows into the shaft during drilling of the hole. The discharge from the clay seam is transferred to the productive stratum. Because of this discharge, horizontal fractures are formed where the fluid pressure is less than rock pressure. The extent and width of the fractures, the

Card 1/2

The Results of Our Work (Cont.)

relationship of discharge to bottom pressure, and other characteristics may be calculated theoretically. To obtain numerical results and experimental verification of the theory, it is necessary to know, in more detail than now known, the mechanical properties of the rock. It is also necessary to obtain the corresponding technical data (in particular, the relationship of bottom pressure and discharge to the time involved in rock disruption), and to conduct subsurface investigations for the study of distribution of fractures in the stratum. Vertical fractures are more advantageous in beds with a large number of clay seams, when the fractures penetrate the entire oil-bearing formation. Vertical fractures are hydrodynamically less favorable in thick uniform beds. It is assumed that the most efficient system includes complete sand injection. This means that one of the fractures must be completely filled with sand. In calculating the flow toward the drill hole, in which the fracturing occurred, it is proper to neglect the change in pressure along the fractures. Satisfactory precision in the calculations is possible in this manner.

Card 2/2

V. B. O.

USSR/Engineering - Filtration FD-2234

Card 1/1 Pub 41-2/17

Author : Barenblatt, G. I. and Krylov, A. P., Moscow

Title : On the elastic-plastic method of filtration

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 2, 5-13, Feb 1955

Abstract : Investigates the irregular filtration of an elastic liquid in a non-elastic porous medium, i.e., in a porous medium characterized by a dissimilar relationship between porosity resulting from stress during loading and unloading. Discards the classical point of view that the porous medium in which filtration occurs is not deformed during the filtration process. Graphs, formulae. Twelve USSR references.

Institution: Institute of Petroleum, Academy of Sciences USSR

Submitted : February 5, 1955

BARBENBLATT, G. I.

USSR/Engineering - Filtration FD-2235

Card 1/1 Pub 41-3/17

Author : Barbenblatt, G. I., Moscow

Title : On some problems in the restoration of pressure and the diffusion of the discharge wave during the elastic-plastic method of filtration

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 2, 14-26, Feb 1955

Abstract : Examines the problem of the restoration of pressure and the diffusion of the discharge wave during the nonstationary filtration of a liquid into a drain and then into a single well, assuming the porous medium is non-elastic. The method of approximation is used in the solution. Graphs, formulae, tables. Six USSR references.

Institution: Insitute of Petroleum, Academy of Sciences USSR

Submitted : February 5, 1955

Barenblatt, G.I.

42. ROOF COLLAPSE IN MINE WORKINGS. Barenblatt, G.I. and Khristianovich, S.A. (Izv. Akad. Nauk SSSR, Otdel. Tekh. Nauk (Bull. Acad. Sci. U.S.S.R., Sect. Tech. Sci.), Nov. 1955, 73-86). An analysis is made of the distribution of stresses and displacements in strata attending the gradual collapse of roof under the influence of mine workings. A new boundary condition is introduced which eliminates from the calculation infinite tensile stresses and physically impossible deformations along the contour line of workings. The fact that coal possesses essentially different elastic properties than the overlying rock formations, is also taken into account. In the undisturbed seam the stress acting on the coal is equal to the product of the mean specific gravity of the overlying strata and the depth below the surface. In the vicinity of a working additional stress come into play necessitated by the roof curvature. In this region coal exists in the plastic state. Calculations are made of the distribution of stresses in the plastic and in the elastic regions of the seam.

S.M.R.

BARENBLATT, G.I.

Some problems in the theory of movement of suspended particles in a turbulent stream. Vest.Mosk.un. 10 no.8:53-56 Ag '55.
(Sedimentation and deposition) (MLRA 9:1)

BARENBLATT, G. I

Barenblatt, G. I. On the motion of suspended particles in a turbulent flow taking up a half-space or a plane open channel of finite depth. Prikl. Mat. Meh. 19, 61–88 (1955). (Russian)

1 - F/W

Cet article utilise les résultats obtenus par l'auteur dans une recherche précédente [Prikl. Mat. Meh. 17, 261–274 (1953); MR 15, 478]. Le mouvement dépend d'une certaine grandeur sans dimensions K analogue au nombre bien connu de Richardson. Pour K très petit par rapport à l'unité la théorie de diffusion représente assez bien le mouvement. L'auteur étudie le cas où K est comparable à l'unité. Le caractère du mouvement dépend d'un paramètre sans dimensions $w=a/\varkappa v$ où $\varkappa$ est la constante de Kármán, v est la vitesse du frottement, et a est la grandeur hydraulique des particules. Les résultats expérimentaux de V. Vanoni [Proc. Amer. Soc. Civil Engrs. 70, 793–828 (1944)] paraissent confirmer assez bien les résultats de l'auteur.

M. Kiveliovitch (Paris).

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BARENBLATT, G.I.

AID P - 1800

Subject : USSR/Hydraulic Engineering Construction

Card 1/1 Pub. 35 - 12/17

Author : Barenblatt, G. I. and Shestakov, V. M.

Title : Canal seepage into dry soil

Periodical : Gidr. stroi., v.24, no.1, 40-41, 1955

Abstract : A mathematical analysis of unstable ground water in an inclined uniform impervious layer during the instant change of level at the end of the layer as established by equations. Two diagrams are given. Four Russian references of 1945, 1952, 1952 and 1954.

Institution: None

Submitted : No date

SOV/124-57-4-4487

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 89 (USSR)

AUTHOR: Barenblatt, G. I.

TITLE: On Some Nonlinear Parabolic Problems of the Hydrodynamic Theory of Nonstationary Seepage (O nekotorykh nelineynykh parabolicheskikh zadachakh gidrodinamicheskoy teorii nestatsionarnoy fil'tratsii)

PERIODICAL: Tr. 3-go Vses. matem. s"yezda. Vol I, Moscow, AN SSSR, 1956, pp 199-200

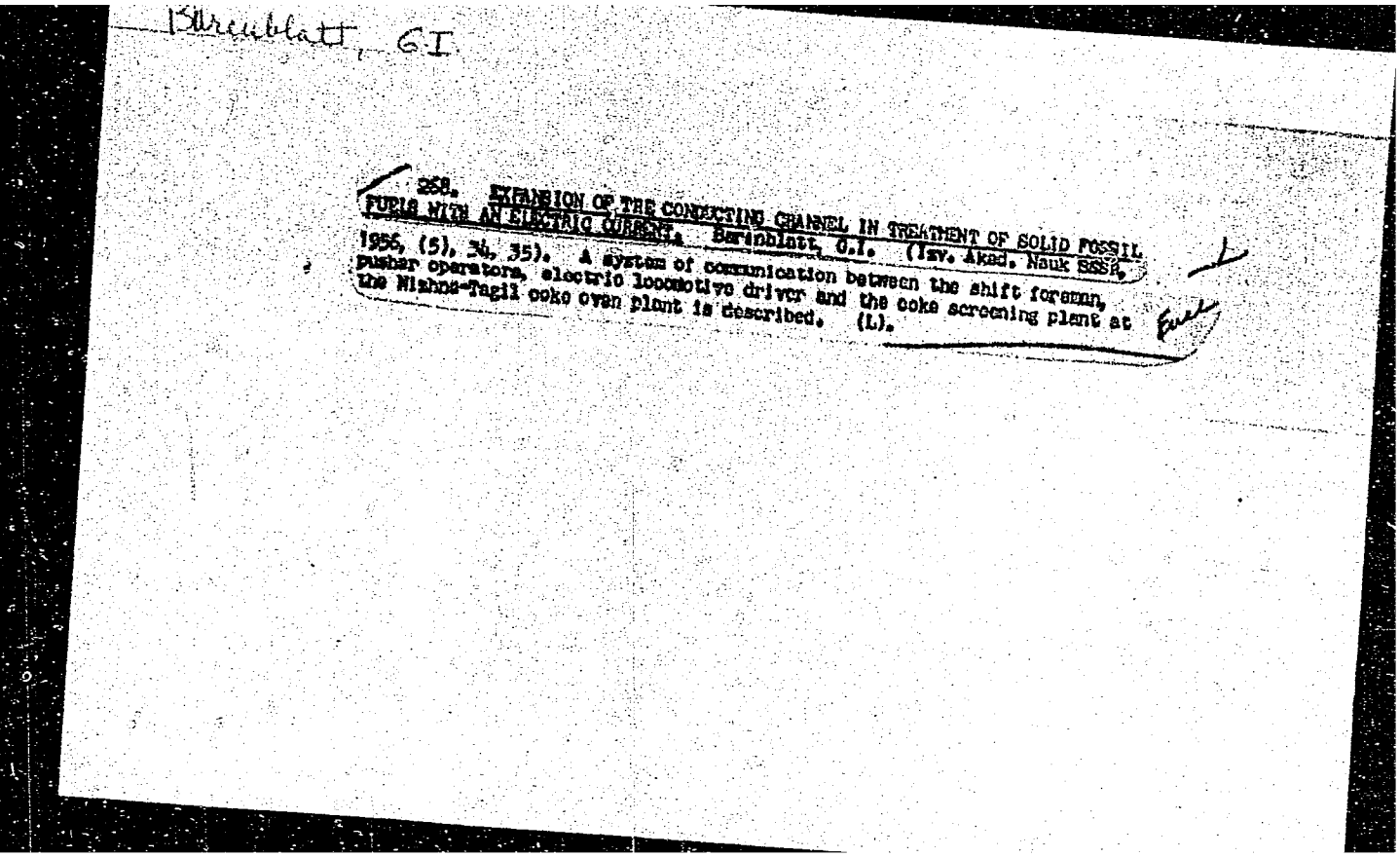
ABSTRACT: Bibliographic entry

Card 1/1

BARENBLATT, G.I. (Moskva); TRIFONOV, N.P. (Moskva).

On a few axisymmetric problems on unsteady fluid and gas flow through porous media. Izv.AN SSSR.Otd.tekh.nauk no.1:59-70 Ja '56.
(MLRA 9:5)

1. Institut nefti AN SSSR i Institut tochnoy mekhaniki i vychislitel'-noy tekhniki AN SSSR.
(Soil percolation) (Petroleum engineering)



Barenblatt, G.I.

258. EXPANSION OF THE CONDUCTING CHANNEL IN TREATMENT OF SOLID FOSSIL FUELS WITH AN ELECTRIC CURRENT. Barenblatt, G.I. (Izv. Akad. Nauk SSSR, 1956, (5), 34, 35). A system of communication between the shift foreman, pusher operators, electric locomotive driver and the coke screening plant at the Nizhne-Tagil coke oven plant is described. (L).

BARENBLAT, G.I. (Moskva)

Expansion of the conducting channel during the processing of solid mineral fuel by electric current. Izv. AN SSSR Otd.tekh. nauk no.7:125-128 Jl '56. (MLRA 9:9)
(Coal--Carbonization)

BARENBLATT, G.I.

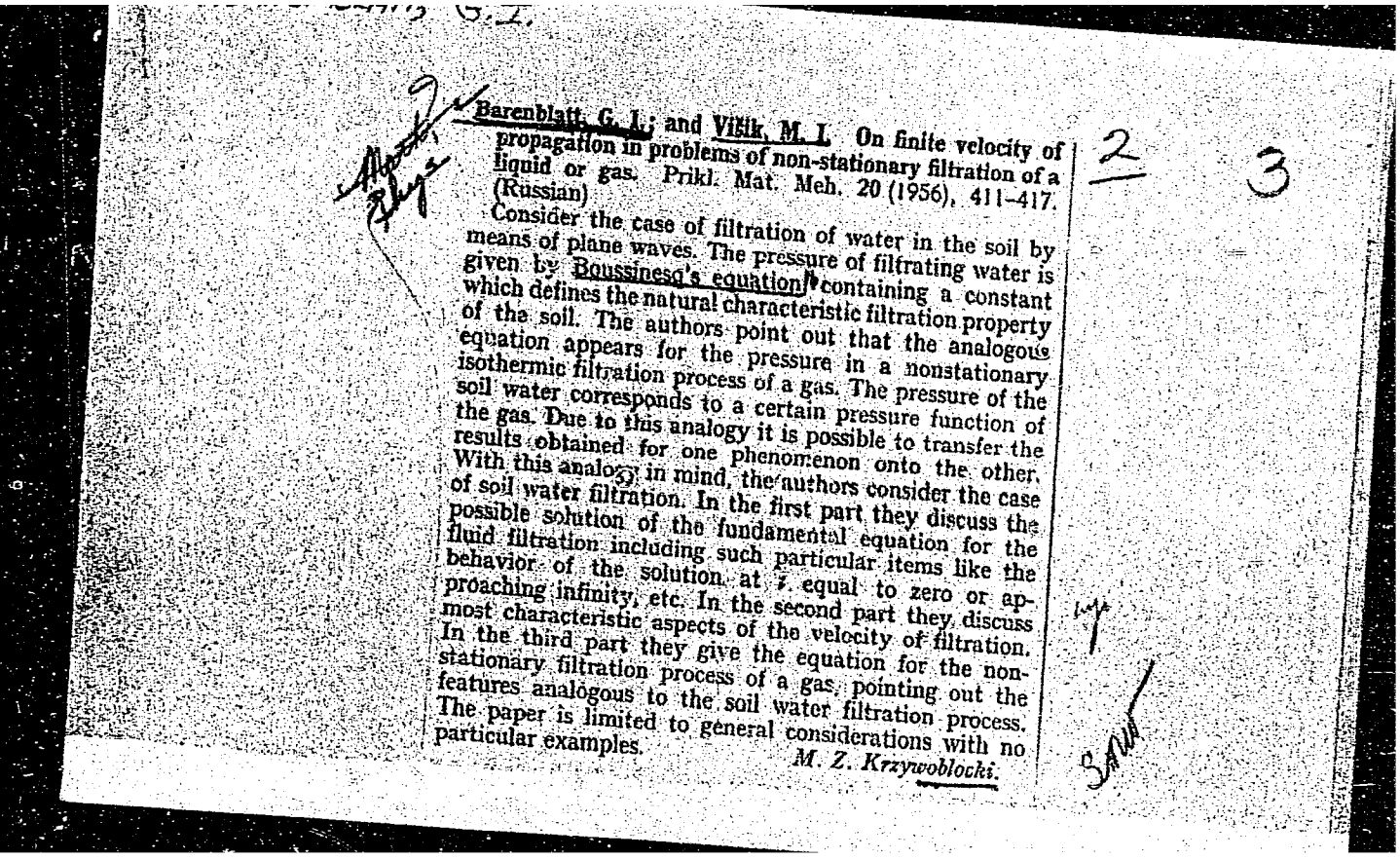
Formation of horizontal fissures in petroleum layers subjected to hydraulic rupture. Izv.AN SSSR Otd.tekh.nauk no.9:101-105 S '56. (MLRA 9:9)

1.Institut nefti AN SSSR.
(Petroleum engineering)

BARENBLATT, G.I. (Moskva).

Possibilities of linearization in some problems of nonstationary gas filtration. Izv.AN SSSR. Otd. tekh.nauk no.11:111-113 N '56. (MLRA 10:1)

(Gas, Natural) (Soil percolation)



Barenblatt, G. I.; and Višik, M. I. On finite velocity of propagation in problems of non-stationary filtration of a liquid or gas. Prikl. Mat. Meh. 20 (1956), 411–417. (Russian)

Consider the case of filtration of water in the soil by means of plane waves. The pressure of filtrating water is given by Boussinesq's equation containing a constant which defines the natural characteristic filtration property of the soil. The authors point out that the analogous equation appears for the pressure in a nonstationary isothermic filtration process of a gas. The pressure of the soil water corresponds to a certain pressure function of the gas. Due to this analogy it is possible to transfer the results obtained for one phenomenon onto the other. With this analogy in mind, the authors consider the case of soil water filtration. In the first part they discuss the possible solution of the fundamental equation for the fluid filtration including such particular items like the behavior of the solution at t equal to zero or approaching infinity, etc. In the second part they discuss most characteristic aspects of the velocity of filtration. In the third part they give the equation for the nonstationary filtration process of a gas, pointing out the features analogous to the soil water filtration process. The paper is limited to general considerations with no particular examples.

M. Z. Krzywoblocki.